erotocritou
SECURITY SYSTEMS

LITEFENCE

SECURITY DEVICE FOR PERIMETER PROTECTION

USER'S MANUAL

LITEFENCE (ANALYSER)
320.SIS.LFEN300F011S

LITEFENCE TRANSMITTER
320.SIS.LFEN300F011T

LITEFENCE LITE(ANALYSER)
320.SIS.LFEN300F011L

Rev.002

LiteFENCE - How it works

Luceat anti-climb protection system is composed of 3 elements:

- **The analyser *LiteFENCE*, that analyses the flow of light**
- **The plastic fiber cable *LiteWIRE* (with anti-UV filters), which transmits light**
- **An opto-mechanic accessory (like bolts or sensors), which transforms the vibration/oscillation/ flexion of the fence into a variation of the light signal**

It is important to make sure that the cable LiteWIRE is installed correctly, i.e.:

- it is fastened to the fence without introducing attenuation on the light signal;
- it is installed correctly to the fence by means of opto-mechanic accessories to detect attempts of climbing-over without false alarms.

The instructions contained in this manual will enable you to satisfy the above mentioned conditions.

It is necessary to read this manual before installing LiteFENCE, as most of the problems that usually occur are due to installation mistakes.

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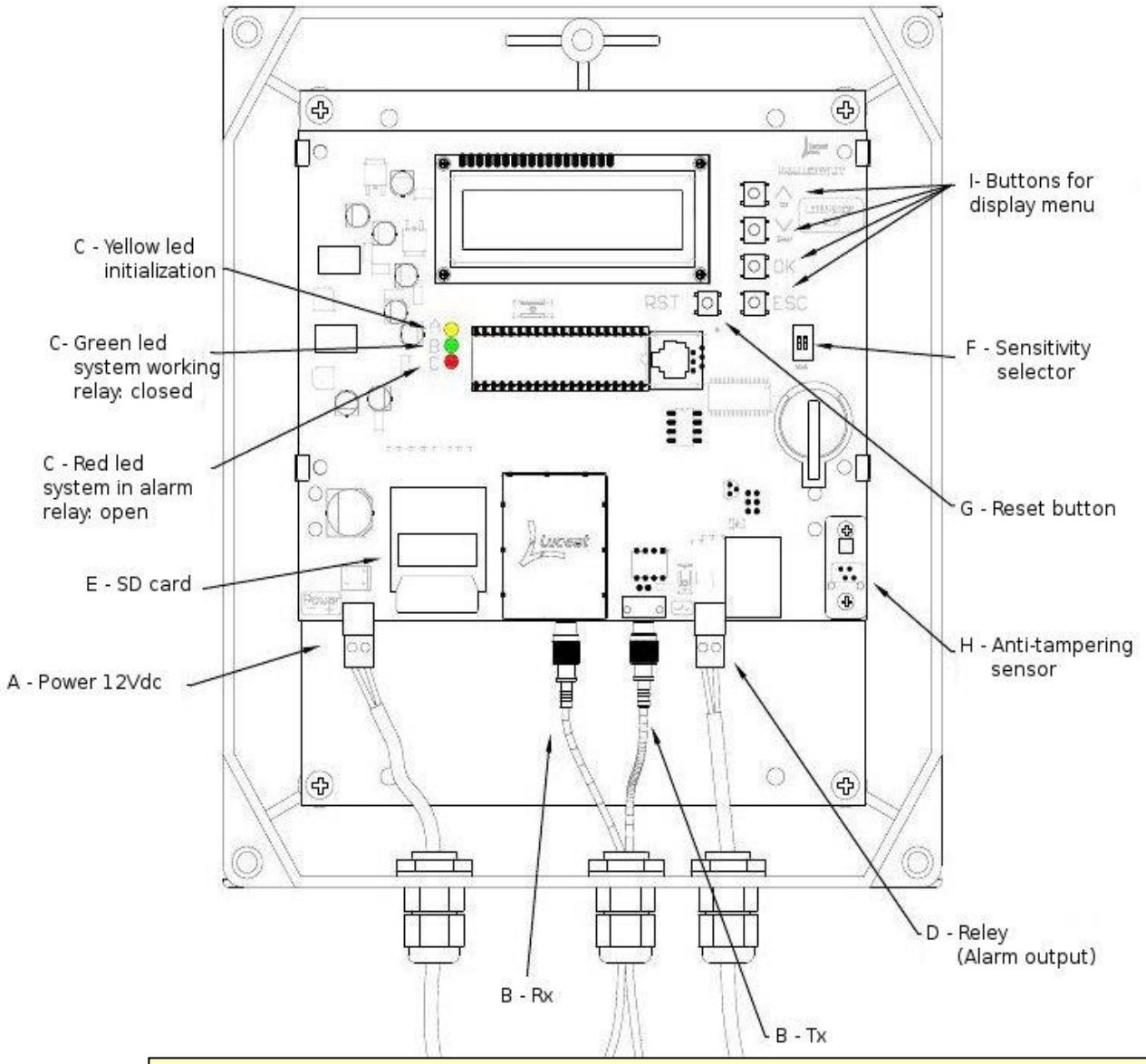
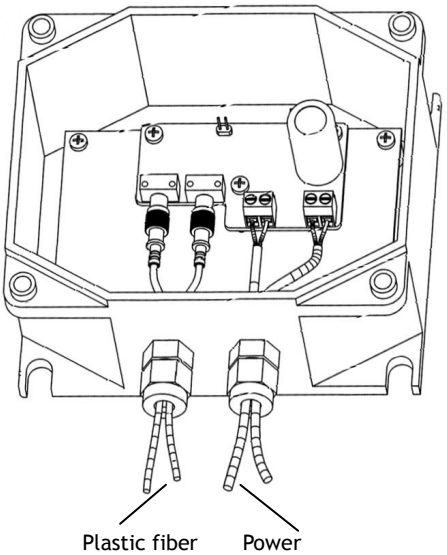
LiteFENCE analyser


I- Buttons for display menu
C - Yellow led initialization
C- Green led system working relay: closed
C - Red led system in alarm relay: open
F - Sensitivity selector
G - Reset button
E - SD card
H - Anti-tampering sensor
A - Power 12Vdc
D - Reley (Alarm output)
B - Rx
B - Tx

Power supply: 12-24VDC±10% **Consumption:** 200mA at 12VDC (2W max)

Alarm output: 5A/240Vac NC **Tamper:** optical anti-tampering sensor

Optical Power budget: -30dBm **Fiber:** LiteWIRE simplex anti-UV¤ (max



(TX)

LiteFENCE transmitter

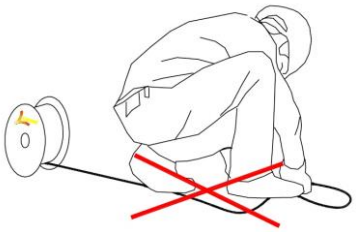
LiteFENCE Lite analyser

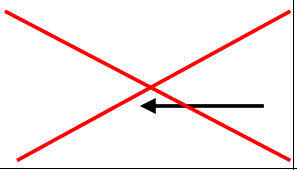
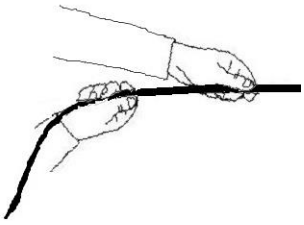
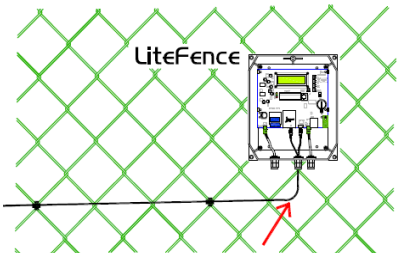
Protection rating	IP55
Operating range	0-250m* (max 30dB)
Optical power budget	30dB
Power supply	**9**-12V±10%
Operating temperature	-20˚+70˚C
Humidity	5 to 90%
Consumption at 12VDC	80mA
Dimension in IP55 box	115x160x60mm
Otptical connector out	F-SMA
EMI/RFlilmmunity	total

*distance reachable with a correct installation with fiber Attenuation <0.1 dB/m at 525nm. (Sharp curves, cable ties or mechanical stress while placing the fiber can reduce the distance)

General precautions

Plastic fiber is very resistant and does not break, but bends and angles may reduce, also significantly, the maximum distance of the system.



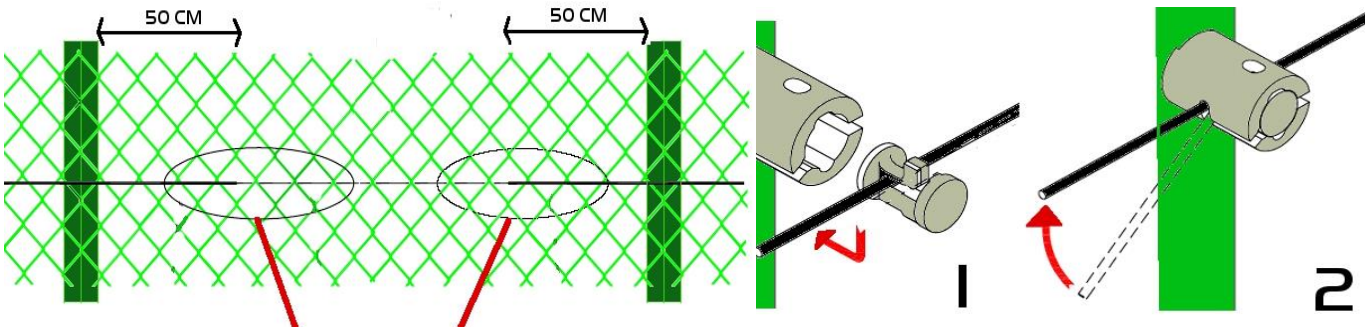
Do not tread or walk on the cable LiteWire 	
Do not pull hard on the cable LiteWire	
Minimum bending radius of 25mm	

LiteFENCE monitors the optical power constantly, so you can detect installation mistakes and install the system properly.

(see: "How to use the power meter function")

LiteFENCE for chain-link fences

The plastic optical fiber is first “woven” along the fence, going in and out as shown in the figure. It is then affixed to the poles with tension bolts (one every 10m) and on the fence with cable ties (1every two meters or between the two poles).



THE CABLE CROSSES THE MESH

During an attempt to climb, the fence and cable bend due to the weight of the thief. This variation is read by the analyser that triggers the alarm via a NC relay contact which can be connected to any alarm control panel.

Wind and vibrations caused by weather conditions and moving vehicles do not cause the fence to bend and so it does not trigger any alarm. For this reason, the installation of the perimeter protection system is simple and does not require the learning of any software program, ensuring a ‘stop to false alarms’.

Depending on the required level of security, you can install on the fence:
- 1 fiber to the centre (to detect climbing and breaking);
- 2 fibers (0.5m and 1.5m from the ground up) to detect climbing and lifting;
- 4 fibers (0.25m, 0.5m, 0.8m, 1.5m from the ground up) to create an impenetrable barrier even in the event the fence is cut.

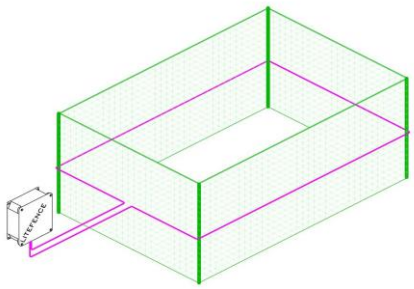
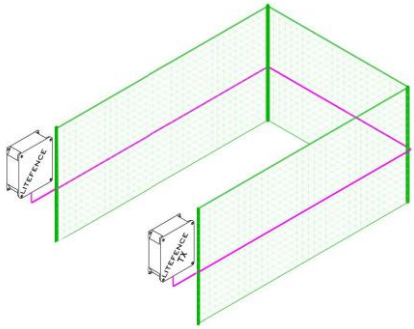
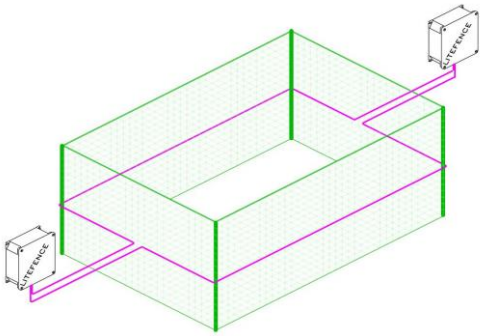
In general, for the protection of a chain-link fence, the following components are required:

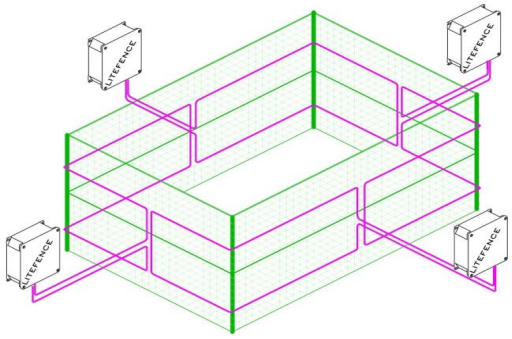
- 1 LiteFENCE analyser every 200/250m of plastic fiber cable
- LiteWIRE plastic fiber cable with UV protection
- 2 FSMA metal connectors every LiteFENCE analyser or coupler
- 1 tension bolt every 10m of fiber
- 1 cable tie every 2m of fiber

Examples of connection schemes for chain-link fences

**LiteFENCE analyzers can be connected separately or in daisy chain.
Using the LiteFENCE transmitter, you can create a point-to-point link
(with no need to close the loop)**

**The jumper is usually inserted: this creates independent alarm zones
(No.LiteFENCE=No. Alarm zones) on the entire perimeter;
if the jumper is not inserted, the alarm will be transmitted throughout the length
creating one single alarm zone(No. LiteFENCE=1 alarm zone)**

Loop connection (max 250m*)	
Point-to point connection using LiteFENCE Transmitter and LiteFENCE Analyser (max 250m*)	
Daisy chain devices point-to-point/loop (no distance limit)	

Independent loops (no distance limit)	

*this distance is reachable with a correct installation with fiber attenuation <0.1 dB/m at 525nm.
(Sharp curves, cable ties or mechanical stress while placing the fiber can reduce the distance)

Security levels on chain link fences

Depending on the requried level of security and budget available, you can install 1, 2, or 4 fibers on the fence

ANTI-CLIMIBING

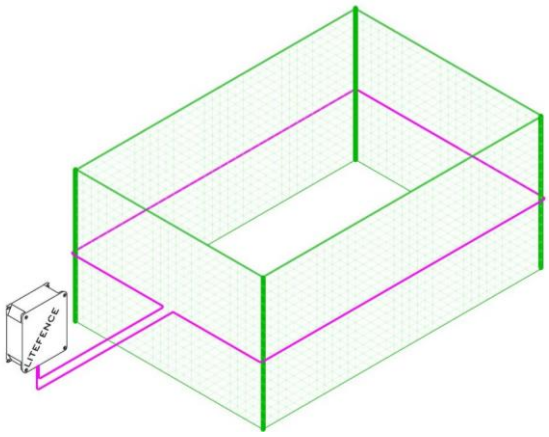
ANTI-BREAKTHROUGH

1 fiber connection: the fiber replaces the middle rod, which is removed.

Only the upper and lower rods are present.

*Basic protection, but cheap solution; max. fence length is 200/250m**

E.g. 200m* perimeter – 1 zone



ANTI-CLIMBING

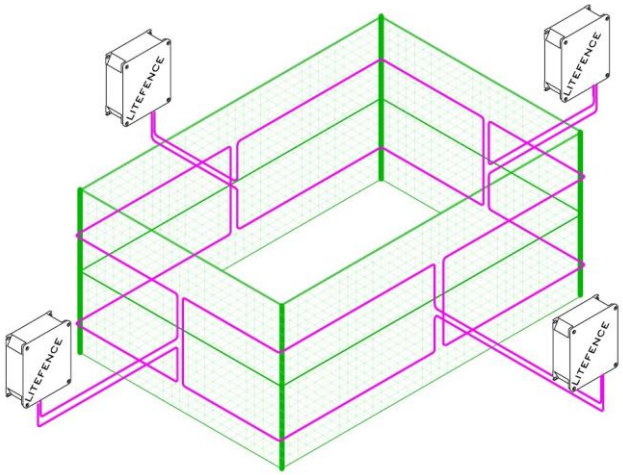
ANTI-LIFTING

Connection with 2 fibers, at 0.5m and 1.5m from ground up (on a 2m high fence)

All the rods (upper, middle and lower) are present.

*Standard, recommended protection rate; max. fence length is 100/125m**

E.g. 400m* perimeter - 4 zones



ANTI-CLIMBING

ANTI-LIFTING

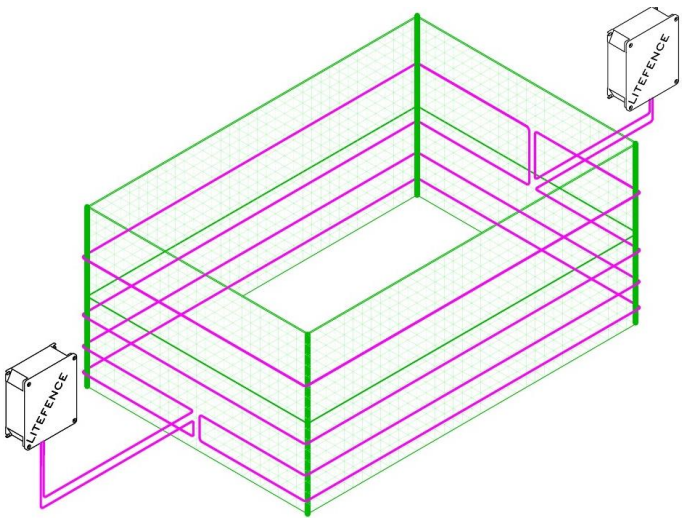
ANTI-BREACH

Connection with 4 fibers.

At 0.25/0.50/0.80 and 1.5m from ground up, on a 2m high fence

*Highest protection: it creates a barrier which is difficult to be breached, even after the mesh has been cut; max. fence length is 50m**

E.g. 100m perimeter – 2 zones



*this distance is reachable with a correct installation with fiber attenuation <0.1 dB/m at 525nm.

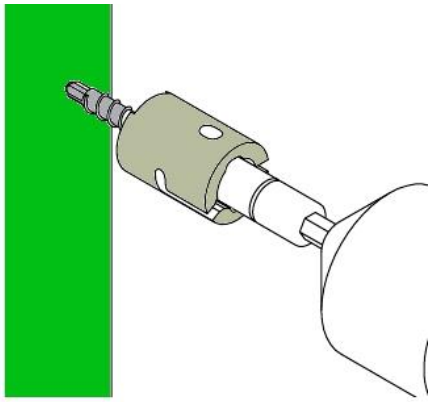
(Sharp curves, cable ties or mechanical stress while placing the fiber can reduce the distance)

Installation on chain-link fences

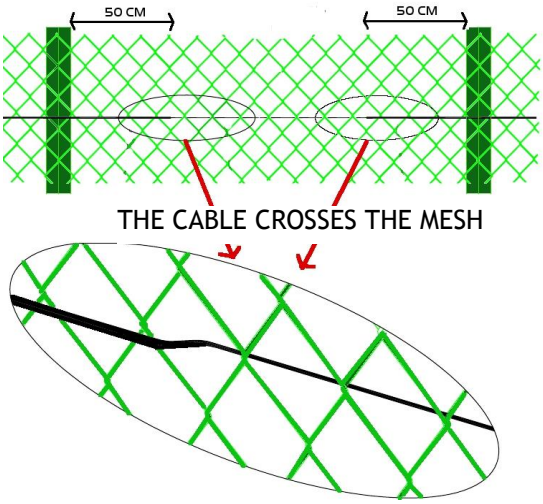
1. Screw the bolt into the pole

1 bolt every10m

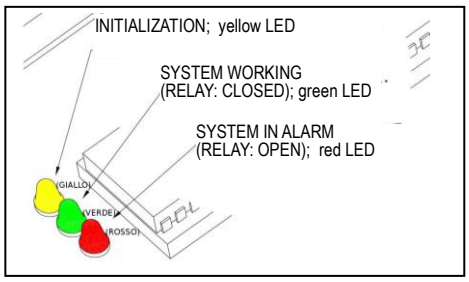
(each bolt introduces a maximum attenuation of 0,1-0.2dB equal to about 1-2m LiteWIRE cable)

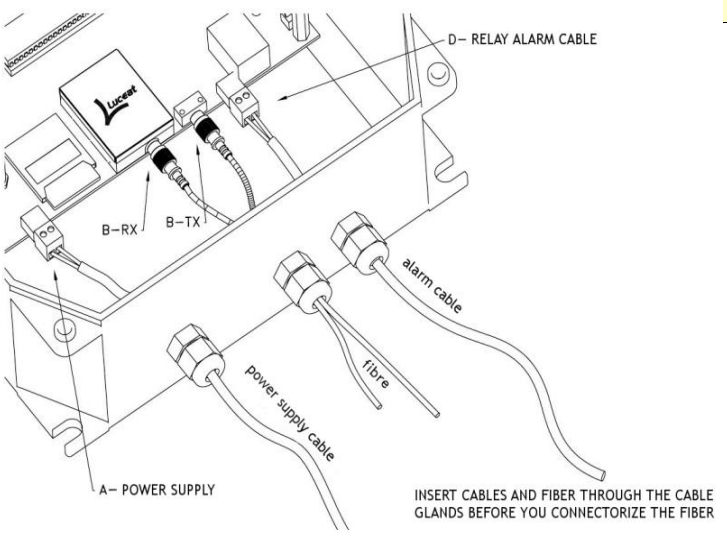


2- Weave (enter/exit) the fiber through the mesh



3. Connectorize the fiber and connect/power LiteFENCE analyser

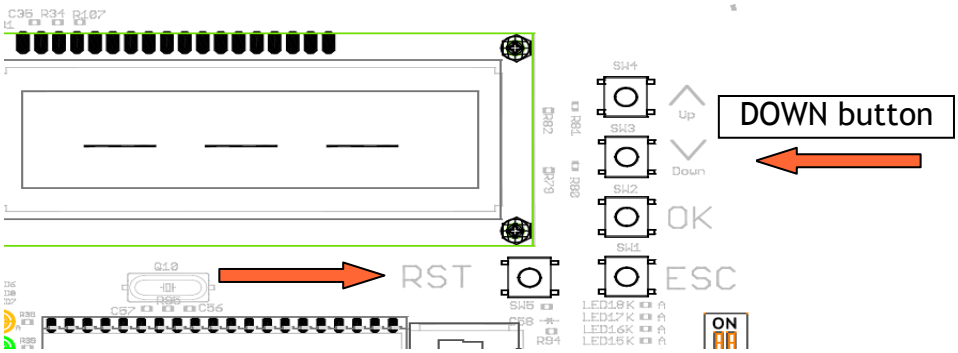




4- Set LiteFENCE to *Power Meter* mode

To prevent increase of attenuation of the fiber during the installation of bolts and cable ties, it is VERY IMPORTANT to keep the optical power of the fiber constantly monitored.

Keep the DOWN button pressed while you switch on the system, until a dashed line appears on the display



N.B.: *if you want to set the system to Power Meter mode when it has already been switched on, Reset the system:*
while you keep the DOWN button pressed, press the Reset button, and then release Reset first

HOW TO READ THE POWER METER DATA CORRECTLY

Plastic optical fiber is made of a polymeric material realized in such a way that it can lead the light inside and guarantee the total reflection of the input signal, to transfer all the entering light to the exit.
However, physical and technical factors occur (ties, tension bolts, eye bolts) and cause power losses along the fiber. That power loss is called attenuation.

Attenuation = optical power loss

Every meter of the installed plastic fiber introduces an attenuation resulting in: the more fiber you install, the more attenuation you introduce, and the less optical power you will receive at the end of the fiber.
Optical power is measured in dBm.

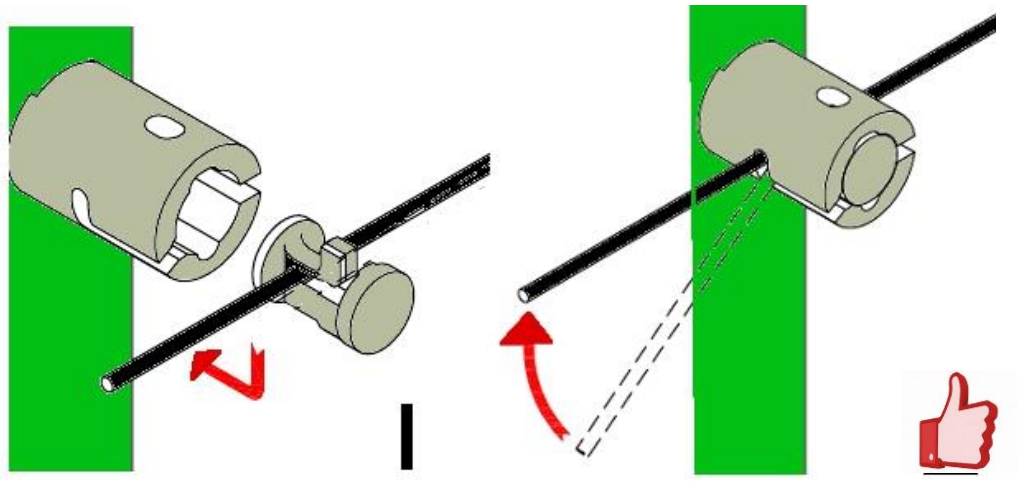
FIBER ENTRANCE
0 dBm = 0meters

Example

FIBER EXIT
-10dBm = 100meters

Maximum sensitivity of Luceat systems is 30dB.
The distances mentioned take into account all common source of attenuation (9dB every SV sensor and 0.1dB every meter of fiber)

5- While you fasten the fiber to the bolts, keep the attenuation monitored with LiteFENCE

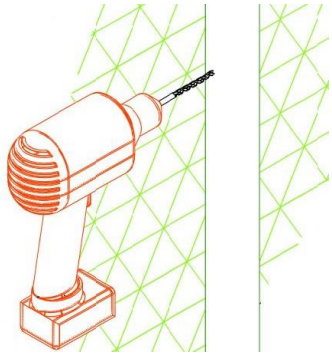


Each tension bolt normally introduces an attenuation of 0.1 to 0.2 dB, which equals to about 1 to 2m of LiteWIRE cable

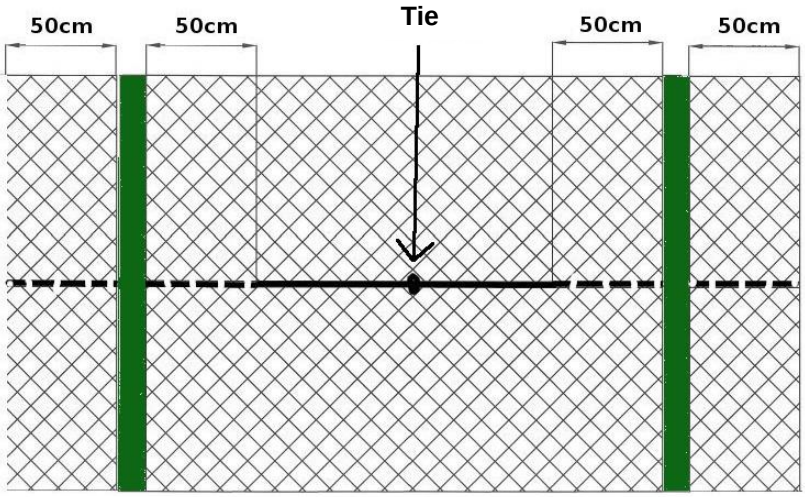
...or make the fiber pass IN FRONT of the pole (this, however, reduces the system sensitivity)

If the power meter shows a higher attenuation value, make sure that the fiber is streight

For the poles where no bolt is screwed: use existing holes OR drill the pole and pass the cable through it

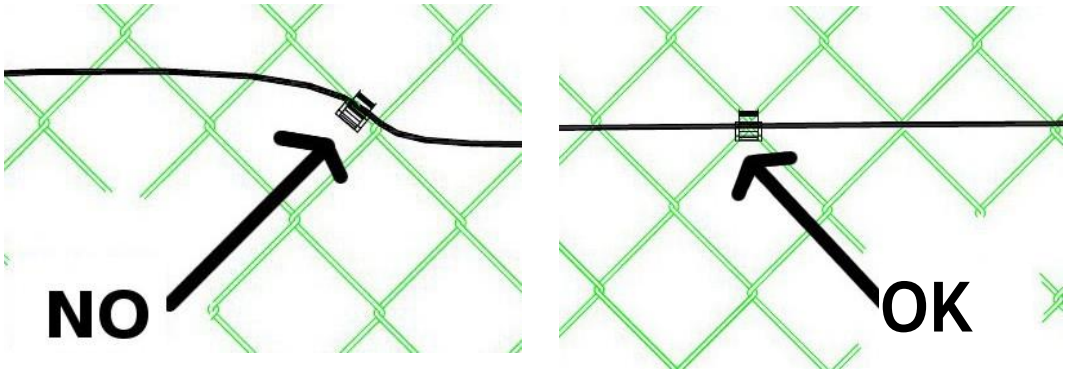


6- Tie the cable to the mesh between the poles using cable ties

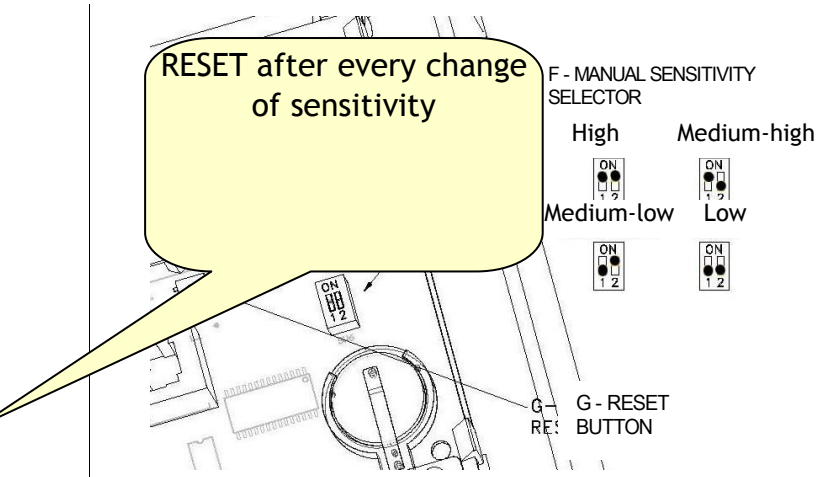


When you tighten the ties, monitor the attenuation values
Cable ties shouldn't introduce any attenuation

In case you notice an increase in attenuation, make sure that the fiber doesn't make folds



7 - Select sensitivity


RESET after every change of sensitivity
F - MANUAL SENSITIVITY SELECTOR
High
Medium-high
Medium-low
Low
ON
1 2
G - RESET BUTTON

LiteFENCE for barbed wire

On each barbed wire arm (usually one every 2m), a clip is attached using a self- drilling screw. The clip fastens the barbed wire and the plastic fiber together.

The plastic fiber is passed through the front of the screw, preventing it from unscrewing, and is attached to the barbed wire with two cable ties near the barb arms (to approx. 10 cm from the clip) and with a third cable tie between the two barb arms.

Any attempt to cut or bend the barbed wire (such as deformation due to the weight of a thief) is detected by the sensor which triggers the signal via the NC alarm output relay (connectable to any alarm control panel).

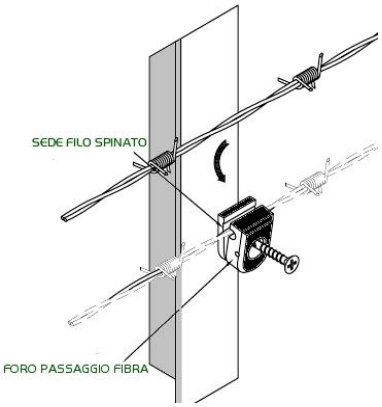
We recommend the use of two rows of fiber attached to the lower barbed wire and to the upper barbed wire.

In general, for the protection of a perimeter wall with barbed wire, the following components are required:

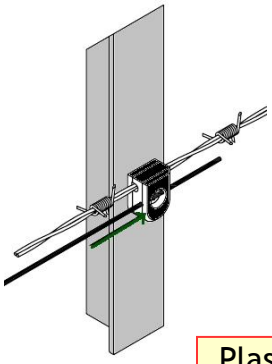
- 1 LiteFENCE analyser every 200/250m of plastic fiber cable
- LiteWIRE plastic fiber cable with UV protection
- 2 FSMA metal connectors every LiteFENCE analyser or coupler
- 1 tension bolt every 10m of fiber
- 1 clip every barb arm
- 2 cable ties every barb arm and 1 cable tie every 2 barb arms

Installation on barbed wire

1- Fasten the barbed wire to the arm using the special clips

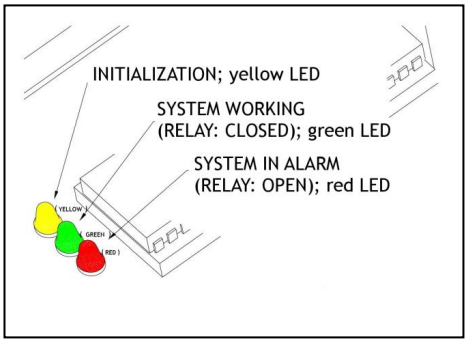


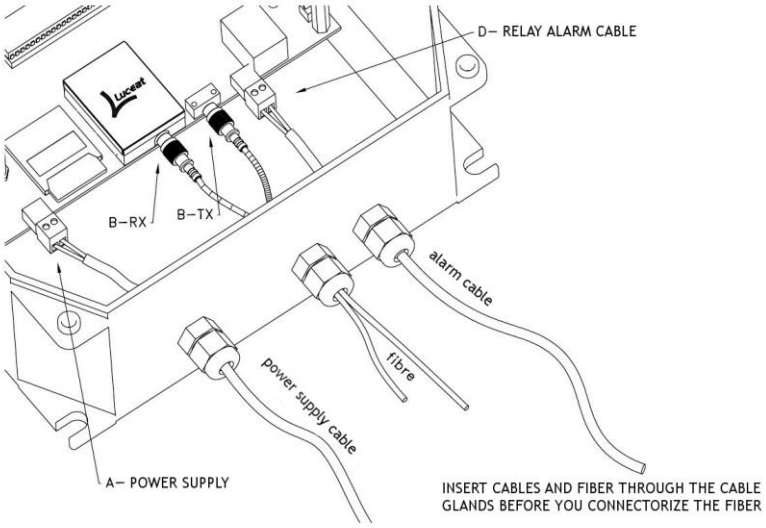
2- Thread the fiber into the clip hole, protecting the screw from unscrewing



Plastic fiber

3. Connectorize the fiber and connect and power LiteFENCE analyser

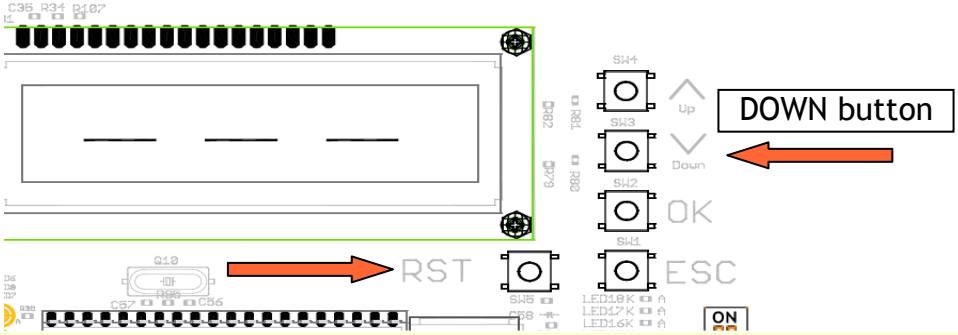




4- Set LiteFENCE to *Power Meter* mode

To prevent increase of attenuation of the fiber during the installation of bolts and cable ties, it is VERY IMPORTANT to keep the optical power of the fiber constantly monitored.

Keep the DOWN button pressed while you switch on the system, until a dashed line appears on the display



N.B.: *if you want to set the system to Power Meter mode when it has already been switched on, Reset the system: while you keep the DOWN button pressed, press the Reset button, and then release Reset first and DOWN afterwards. After a few seconds a dashed line will appear.*

HOW TO READ THE POWER METER DATA CORRECTLY

Plastic optical fiber is made of a polymeric material realized in such a way that it can lead the light inside and guarantee the total reflection of the input signal, to transfer all the entering light to the exit.
However, physical and technical factors occur (ties, tension bolts, eye bolts) and cause power losses along the fiber. That power loss is called attenuation.

Attenuation = optical power loss

Every meter of the installed plastic fiber introduces an attenuation resulting in: the more fiber you install, the more attenuation you introduce, and the less optical power you will receive at the end of the fiber.
Optical power is measured in dBm.

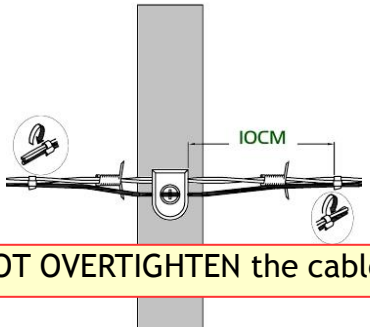
FIBER ENTRANCE
0 dBm = 0meters

Example

FIBER EXIT
-10dBm = 100meters

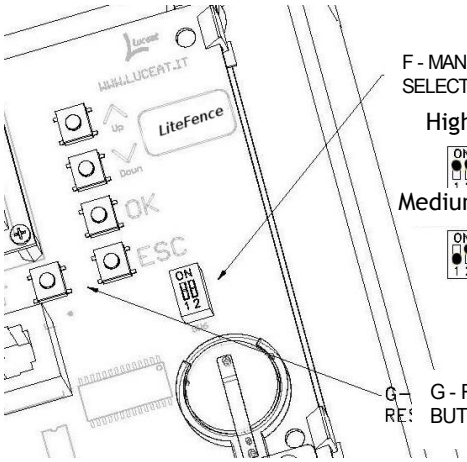
Maximum sensitivity of Luceat systems is 30dB.
The distances mentioned take into account all common source of attenuation (9dB every SV sensor and 0.1dB every meter of fiber)

5-Tie the fiber to the barbed wire (10cm before and 10cm after the clip) and midway between the 2 arms



Do NOT OVERTIGHTEN the cable ties

6 - Select sensitivity



F - MANUAL SENSITIVITY SELECTOR

High | Medium-high

Medium-low | Low

G - RESET BUTTON

RESET after every change of sensitivity

LiteFENCE Lite with SV Lite Sensor on modular fences (type Orsogril/Keller/Betafence/Pratika)

Our SECURITY SYSTEM "SV" is patent pending

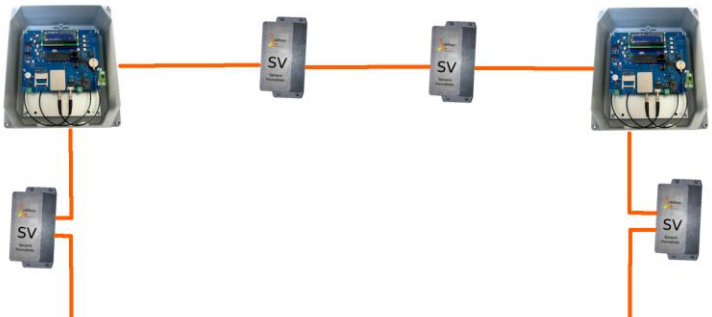
For semi-rigid grating fencing panels (type Orsogril / Keller) and electrically welded panels (type Betafence / Pratika) with a ***minimum height of 145cm.***

The semi-rigid modular nets do not bend under the weight of the thief, but, rather, move back and forth along a single axis in response to the strain caused by the climbing over. Such fluctuations are detectable by attaching the SV Lite sensor to the fence (patent pending).

In fact, in the SV Lite sensor, light passes through two fibers facing each other and is constrained to move only on one axis, the same as that in which the fence sways. In the event of climbing over, swaying causes the misalignment of the fibers, the light beam completely stops and the LiteFENCE Lite analyser, which analyses the light signal, recognizes this variation triggering the alarm.

Simple vibrations resulting from weather conditions or moving vehicles fail to create a swing capable of completely stopping the light beam. Therefore the system has an excellent resistance to false alarms and does not require adjusting, new learning phases or software.

Each SV Lite sensor detects oscillations up to 40m per side (depending on the type of fence) and protects up to 80m of straight fence.



In the case of fence curves, these will decrease the oscillations, so the use of more sensors will be required.

All LiteFENCE analyzers and SV sensors are connected as shown in the figure.

The plastic fiber is "woven" along the fence with an enter and exit process to prevent an entry attempt via the dismounting of a panel.

Grating fence type Orsogril/Keller

Each SV Lite sensor detects oscillations caused by climbing over up to 40m away (straight) in both directions.

Electro-welded fence type Betafence/Pratika

Each SV Lite sensor detects oscillations caused by climbing over up to 25m away (straight) in both directions.

In general, for the protection of modular fencing, the following components are required:

Grating fence type Orsogril/Keller	***Electro-welded fence type Betafence/Pratika***
- 1 SV Lite sensor every 80m of straight fencing (pre-cabled with 40+40m each sensor) - 1 LiteFENCE analyser every 2 SV Lite sensors - 2 FSMA metal connectors every analyser LiteFENCE Lite or coupler - 1 coupler every 2 SV Lite sensors - 1 cable tie every 1.5m of fiber	- 1 SV Lite sensor every 50m of straight fencing (pre-cabled with 40+40m each sensor) - 1 LiteFENCE analyser every 2 SV Lite sensors - 2 FSMA metal connectors every analyser LiteFENCE Lite or coupler - 1 coupler every 2 SV Lite sensors - 1 cable tie every 1m of fiber

Installation on modular fences (h>145cm)

The position of the SV Lite sensor (on the fence) influences the overall sensitivity: installing the SV Lite sensor to the upper part of the fence will increase sensitivity

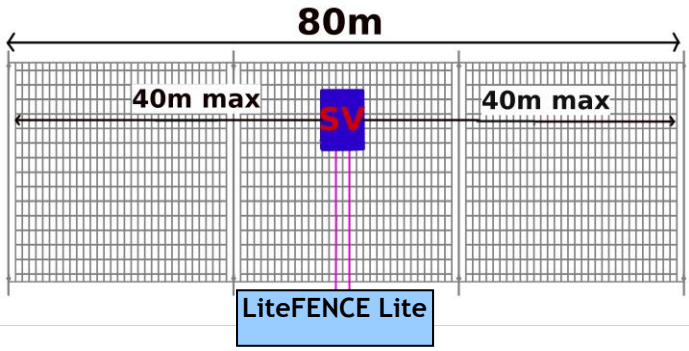
ATTENTION!

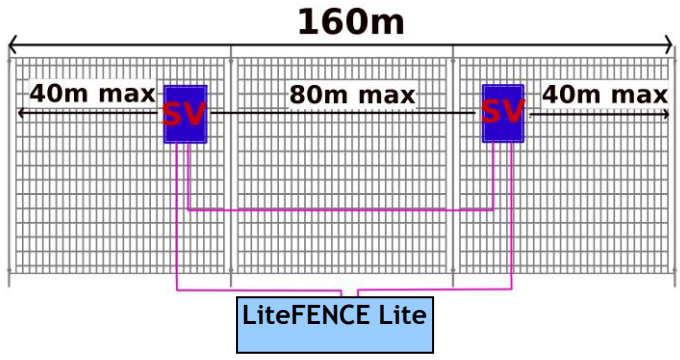
HANDLE SV SENSOR WITH CARE ▫*(it contains precision machinery)*

Power source: completely passive
Attenuation: 15dB with 2x40m plastic fiber▫ (equal to 150m fiber)
Protection Grade: IP68 in metal box
Dimensions: 60x80xh150mm

Grating fence (e.g. Orsogril/Keller)

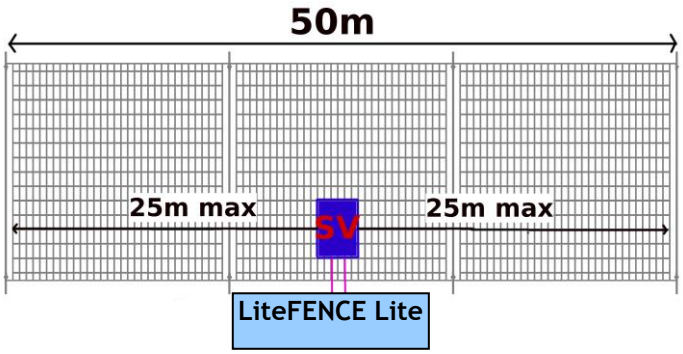
The fence must be higher than145cm. Attach the SV Lite sensor to the upper part of the fence

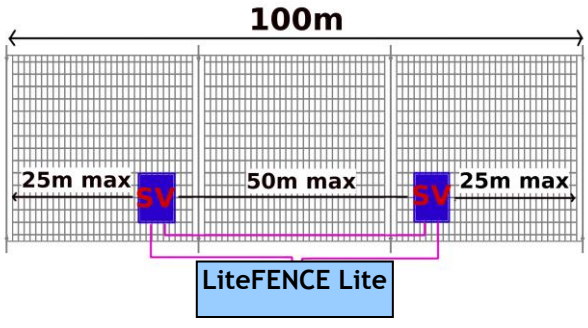




Electro-welded Fence (e.g. Betafence)

The fence must be higher than145cm. Attach the SV Lite sensor to the lower part of the fence or to the fence pole

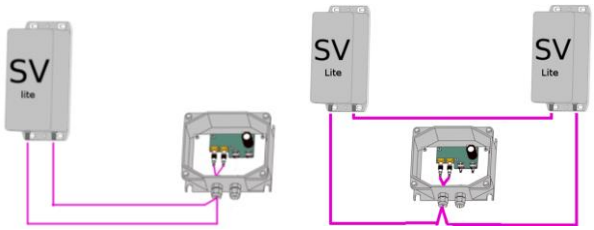


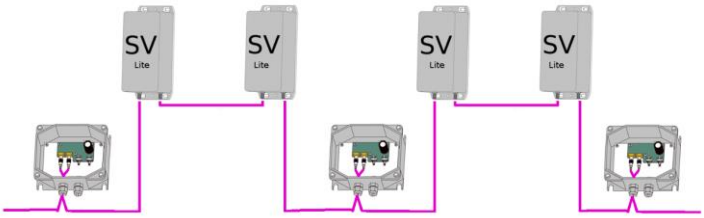


Pass the fiber (sewing) into the fence
to avoid intrusion by panel removal

DO NOT OVETIGHTEN CABLE TIES!
Tighting too much increases fiber attenuation reducing the maximum distance

1- Attach the SV Lite sensor to the fence by using the brackets supplied and connect plastic fiber to the LiteFENCE Lite analyser

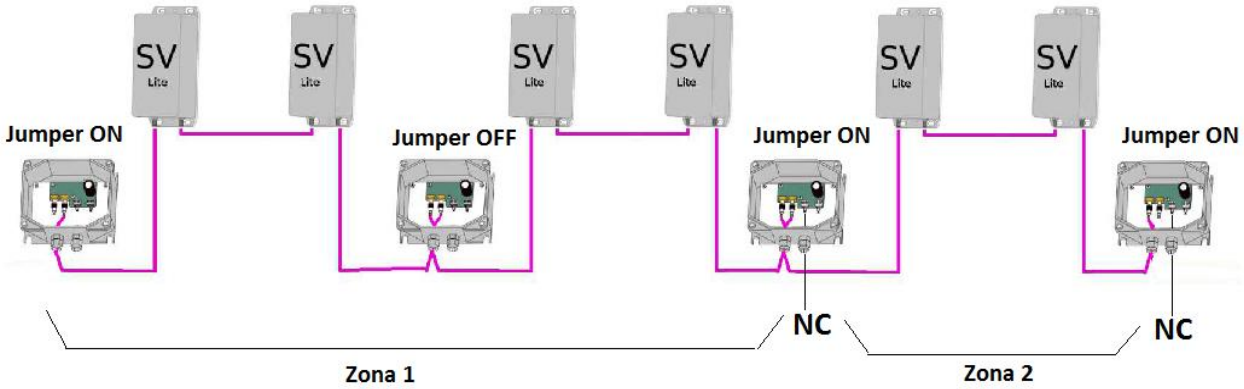




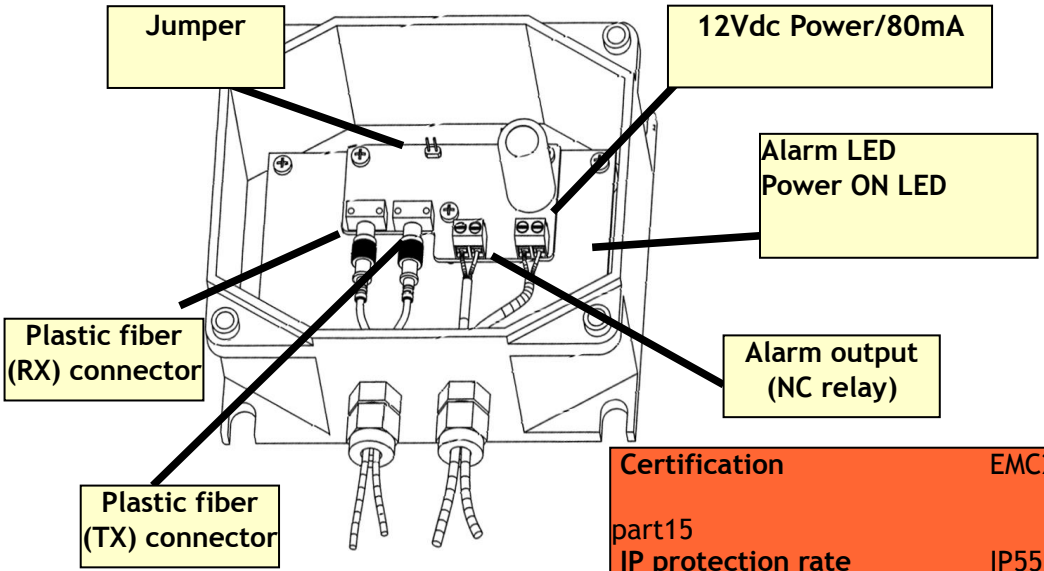
Daisy-chain

2 SV
1 Lite

The jumper is usually inserted: this creates independent alarm zones (No.LiteFENCE Lite=No. Alarm zones) on the entire perimeter; if the jumper is not inserted, the alarm will be transmitted throughout the length creating one single alarm zone(No. LiteFENCE Lite=1 alarm zone)



Daisy chain installation + single zone alarms



Certification	EMC2004/108/CE FCC verification level part15
IP protection rate	IP55
Optical power budget	30dBm
Optical output (relay)	0,2A/230vac 1a/24vdc
Power supply	+9/12vdc
Operating temperature	-20°c+50°c
Humidity	from 5 to 95%
Power consumption	80mA
Max power	1W
EMI/RFI Immunity	Total

3-Connect the two SV Lite sensors (with a coupler) and connect them to LiteFENCE Lite

4-Check that the system is working correctly

- check that the NC relay is closed
- check the the Alarm LED is green

WARNING

LiteFENCE Lite has NO internal adjustment
because only high swaying causes the misalignment of the fibers.

In case of incorrect alarms, change the position of the sensor (UP/DOWN) ▫to

HOW TO READ THE POWER METER DATA CORRECTLY

Plastic optical fiber is made of a polymeric material realized in such a way that it can lead the light inside and guarantee the total reflection of the input signal, to transfer all the entering light to the exit.
However, physical and technical factors occur (ties, tension bolts, eye bolts) and cause power losses along the fiber. That power loss is called attenuation.

Attenuation = optical power loss

Every meter of the installed plastic fiber introduces an attenuation resulting in: the more fiber you install, the more attenuation you introduce, and the less optical power you will receive at the end of the fiber.
Optical power is measured in dBm.

FIBER ENTRANCE
0 dBm = 0meters

Example

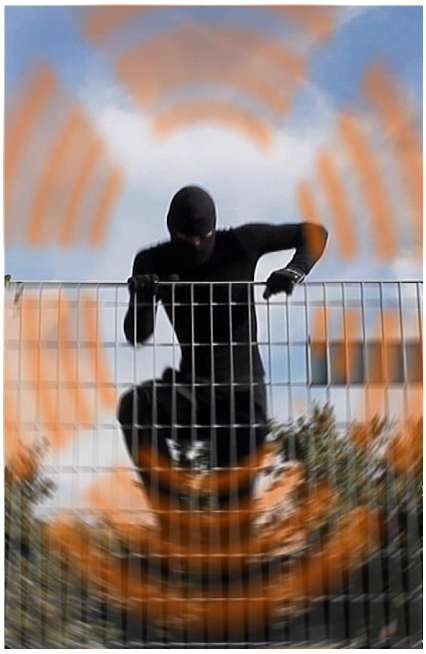
FIBER EXIT
-10dBm = 100meters

Maximum sensitivity of Luceat systems is 30dB.
The distances mentioned take into account all common source of attenuation
(9dB every SV sensor and 0.1dB every meter of fiber)

LITEFENCE WITH SV SENSOR ON RIGID FENCE

Our SECURITY SYSTEM "SV" is patent pending

For rigid fences higher than 115 cm.



The fiber, normal or in a hybrid version (to power LiteFENCE analysers), is "woven" along the fence with an in and out process.

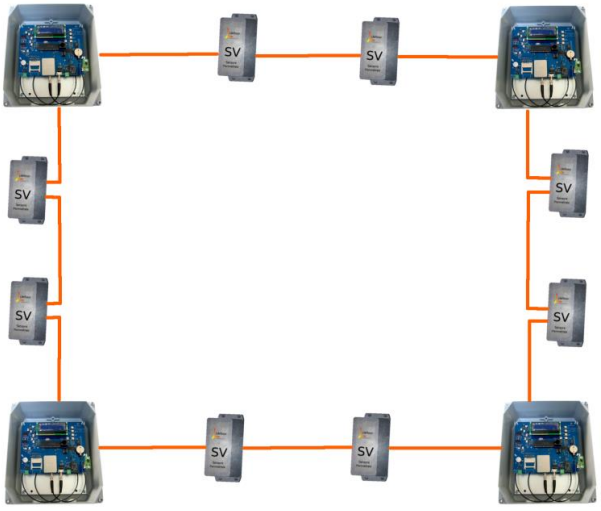
In the SV sensor, light passes through two fibers facing each other. A vibration creates a misalignment of the fibers and a variation of the light intensity that the LiteFENCE analyser detects, in turn generating an alarm. LiteFENCE, compared to LiteFENCE Lite, is able to detect the partial misalignment of the fiber caused by a slight vibration and, therefore, detects vibrations up to 10/15m (for fences with a height between 110 and 145 cm) and up to 15/25m (for fences higher than 145cm per side), protecting up to 30/50m of a straight fence.

In the case of fence curves, these will decrease the oscillations, so the use of more sensors will be required.

Excellent tolerance to false alarms is guaranteed by the high frequency of vibrations caused by weather conditions and moving vehicles on this type of fence, filtered by the inertia of the SV sensor and LiteFENCE firmware.

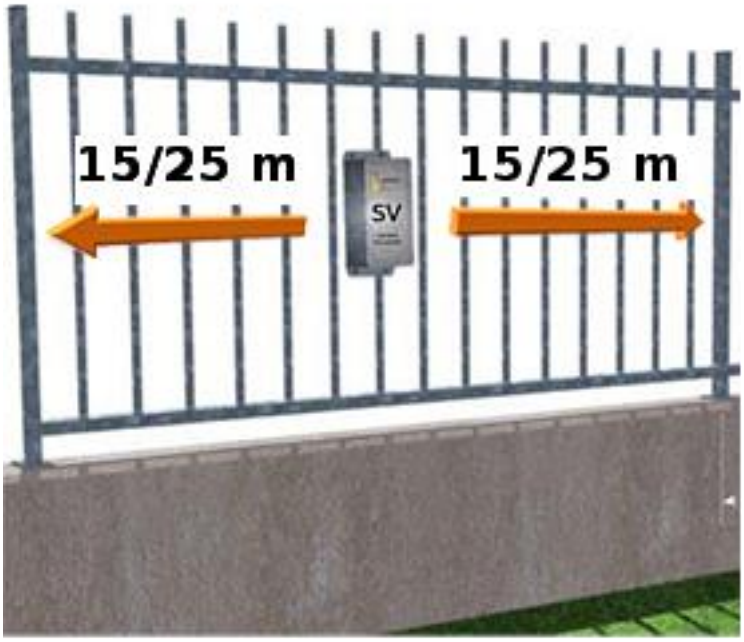
The parameters of LiteFENCE are pre-set in the factory according to the type of fence to protect (selectable from the menu); in order to conform to the specific requirements, however, the operator may adjust the following:

- pre-alarm time (i.e. how long should an oscillation / vibration last before triggering the real alarm);
- sensitivity level (high or low);
- activation filter for high frequency vibrations



All LiteFENCE analysers and SV sensors are connected as shown in the figure.
The fiber, normal or in a hybrid version (to power LiteFENCE analysers), is "woven" along the fence with an in and out process.

In general, for the protection of modular fencing, the following components are required:



Height of fence: 115 cm to 145cm	**Height of fence: over 145cm**
- 1 LiteFENCE analyser every 60m of plastic fiber cable - 1 SV sensor every 30m of plastic fiber - LiteWIRE plastic fiber cable with UV protection - 2 metal connectors for each LiteFENCE analyser or coupler - 1 cable tie every 1m of fiber	- 1 LiteFENCE analyser every 100m of plastic fiber cable - 1 SV sensor every 50m fiber - LiteWIRE plastic fiber cable with UV protection - 2 FSMA metal connectors every LiteFENCE analyser or coupler - 1 cable tie every 2m of fiber

Installation on rigid fences

ATTENTION!

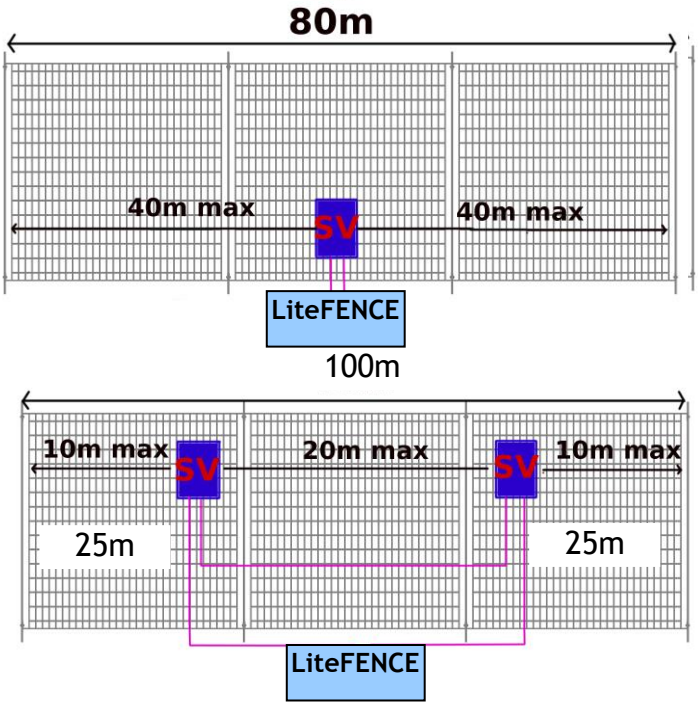
HANDLE SV SENSOR WITH CARE! ▫*(it contains precision machinery)*

Power source: completely passive
Attenuation: 9dB (equal to about 90m of fiber)
Protection rate: IP68 in metal box
Dimensions: 50x83x178mm

INSTALLATION EXAMPLES

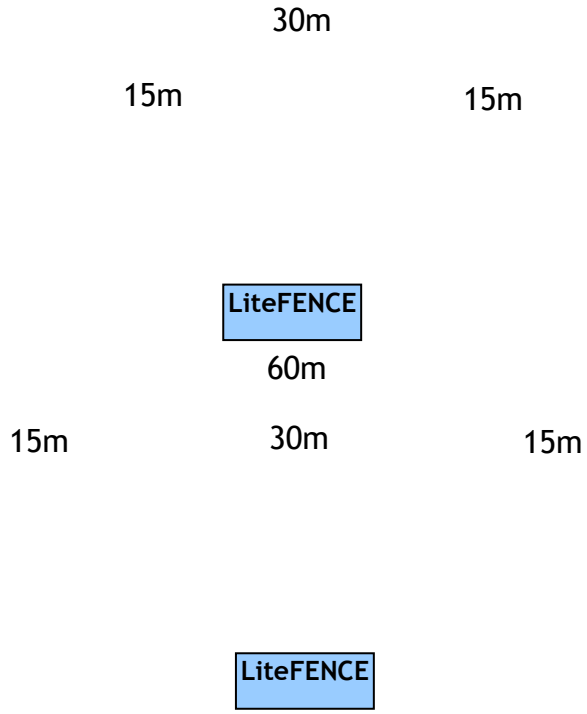
Height of fence ≥145 cm

If the fence is higher than 145cm, attach the SV sensor to the lower part of the fence



Height of fence ≥110 cm

If the fence is higher than 110cm, attach the SV sensor to the upper part of the fence



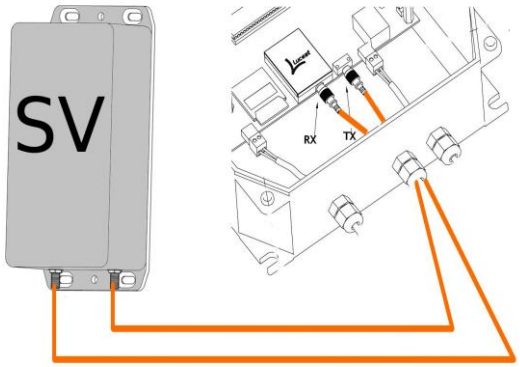
The position of the sensor (on the fence) influences the sensitivity:
To increase sensitivity, install the SV sensor on the upper part of the fence

Pass the fiber (weaving) into the fence to avoid intrusion by panel removal

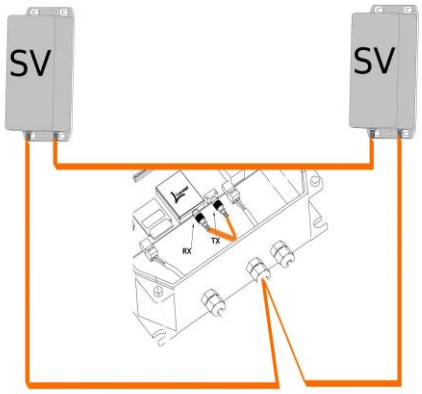
The fiber can be fastened with cable ties

DO NOT OVERTIGHTEN CABLE TIES!
Tightening too much increases fiber attenuation reducing the maximum distance

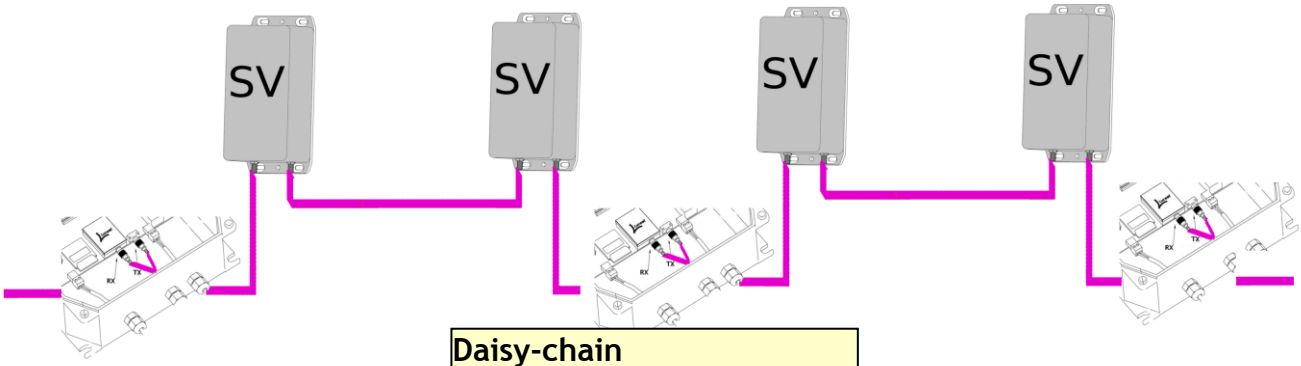
1- Attach the SV sensor to the fence by using the brackets supplied and connect the plastic fiber to the LiteFENCE analyser



1 SV Sensor
1 LiteFENCE



2 SV Sensors
1 LiteFENCE

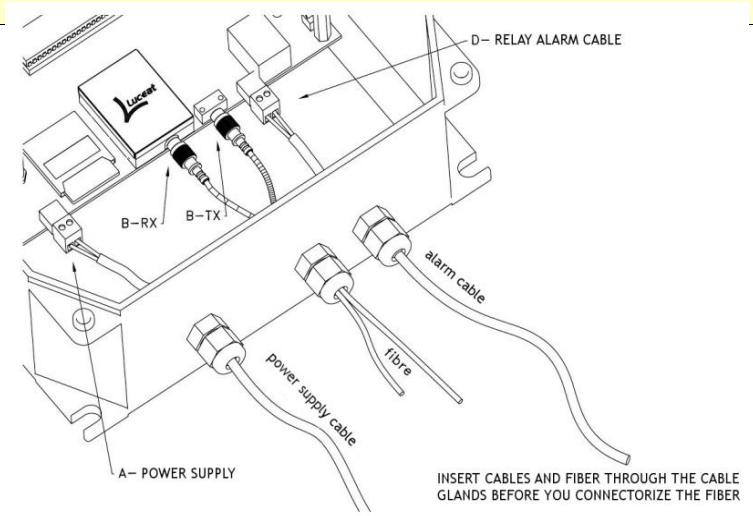


Daisy-chain

Before fastening cable ties, set LiteFENCE to P***ower meter*** mode,
so you'll constantly monitor the attenuation of the fiber during the installation,
to identify and avoid any increase of fiber attenuation

The jumper is usually inserted: this creates independent alarm zones (No.LiteFENCE SV=No. Alarm zones) on the entire perimeter; if the jumper is not inserted, the alarm will be transmitted throughout the length creating one single alarm zone(No. LiteFENCE SV=1 alarm zone)

2-Power LiteFENCE

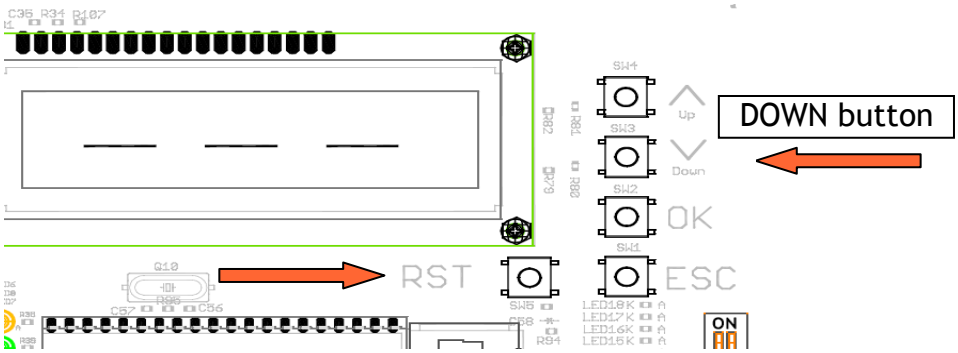


Insert cables and fibers through the cable glands before you conectorize them.
In case of armoured cables, connect Their shield to the ground.

3- Set LiteFENCE to *Power Meter* mode

To prevent increase of attenuation of the fiber during the installation of cable ties, it is VERY IMPORTANT to keep the optical power of the fiber constantly monitored.

Keep the DOWN button pressed while you switch on the system, until a dashed line appears on the display



N.B.: *if you want to set the system to Power Meter mode when it has already been switched on, Reset the system: while you keep the DOWN button pressed, press the Reset button, and then release Reset first and DOWN afterwards. After a few seconds a dashed line will appear.*

HOW TO READ THE POWER METER DATA CORRECTLY

Plastic optical fiber is made of a polymeric material realized in such a way that it can lead the light inside and guarantee the total reflection of the input signal, to transfer all the entering light to the exit.
However, physical and technical factors occur (ties, tension bolts, eye bolts) and cause power losses along the fiber. That power loss is called attenuation.

Attenuation = optical power loss

Every meter of the installed plastic fiber introduces an attenuation resulting in: the more fiber you install, the more attenuation you introduce, and the less optical power you will receive at the end of the fiber.
Optical power is measured in dBm.

FIBER ENTRANCE
0 dBm = 0meters

Example

FIBER EXIT
-10dBm = 100meters

Maximum sensitivity of Luceat systems is 30dB.
The distances mentioned take into account all common source of attenuation (9dB every SV sensor and 0.1dB every meter of fiber)

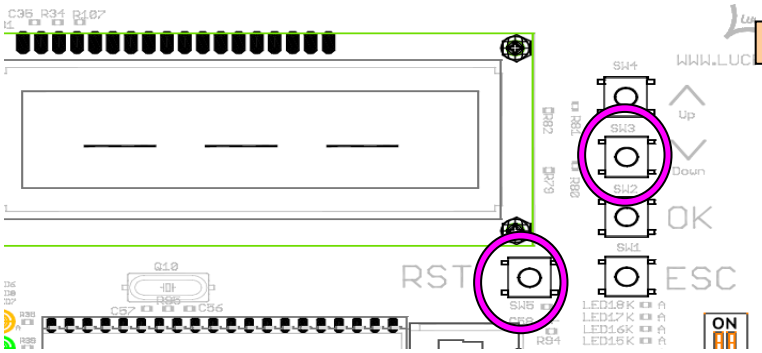
Each LiteFENCE tolerates a maximum attenuation of 30dB,
equal to 2 SV sensors (equal to 15dB each) and 100m* of plastic fiber LiteWIRE

*this distance is reachable with a correct installation with fiber attenuation <0.1 dB/m at 525nm.
(Sharp curves, cable ties or mechanical stress while placing the fiber can reduce the distance)

4-Set the sensitivity

Default setting of LiteFENCE is: height ≥145cm
pre-alarm time is 5s
filter is ON

In case of special environmental conditions or if you want to have different sensitivity performances you can reset these values from the menu



Press the "DOWN" button to enter the menu

RESET after every change of sensitivity

Press DOWN to access the *configuration*

OK

1-**Thresholds:** **select fence type and height**
(**110** for rigid or over 110cm fence / **145+** for semirigid or over 145cm fences

OK

2-**Time Window:** pre-alarm time before alarm goes off (from 0.1 to 10 sec.)

OK

3-**Input filter:** high frequency filter *("OFF" only if you want to detect vibrations on very rigid fences)*

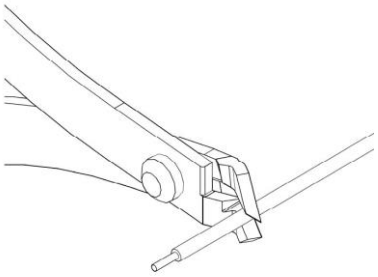
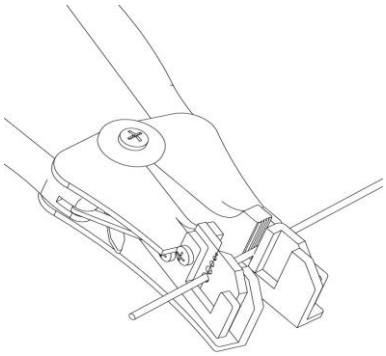
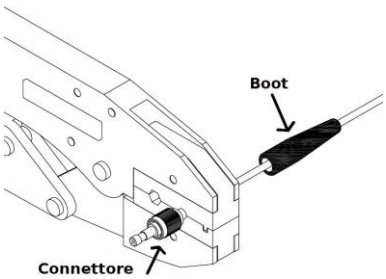
SUGGESTED PRESET				
Fence height	**Detection from XXX to XXX**	**SENSITIVITY**	**PRE-ALARM TIME**	**FILTER**
110cm	From 15 to 25m* each side	S3	0,1 sec	Off
≥145cm	From 25 to 40m* each side	S3	5,0 sec	On

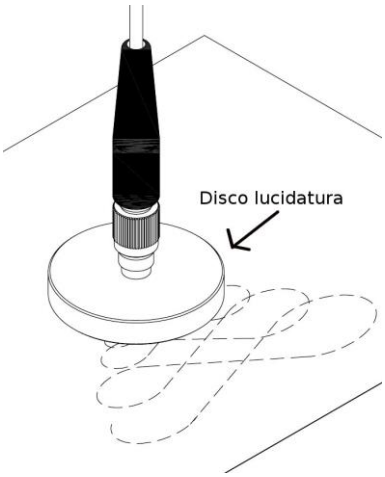
**These distances are approximate and may vary depending on the type of fence and its propagation of vibrations/ocillations*

How to connectorize Litewire

***FIRST** insert the cables into the cable gland of the water tight box, **THEN** crimp the connectors.*

All the tools required to install a connector can be found in the **Litewire connectorization kit**.

	**1- Cut the fiber** with any cutting tool.
	**2 – Remove the jacket** Remove about 1 cm of jacket. The jacket of the optical cable has a diameter of 2.2mm. The fiber has a diameter of 1 mm. **ATTENTION!** *Use a standard cable stripper with a hole of 1.0 mm or more, so you will not damage the fiber.*
	**3 – Crimp the connector** Insert the protection boot. Insert the FSMA connector onto the cable till the jacket stops against the connector; the fiber should come 2mm out of the connector. Crimp the FSMA connectors on the cable jacket. **ATTENTION!** *The connector must be crimped on the cable jacket and must not be crimped directly on the fiber.* *The crimp tool for FSMA connectors must have a hexagonal crimping diameter of 3mm.* *In case you use a Luceat crimp tool (SMAT.001.M22M), use the 0.122” hole.*

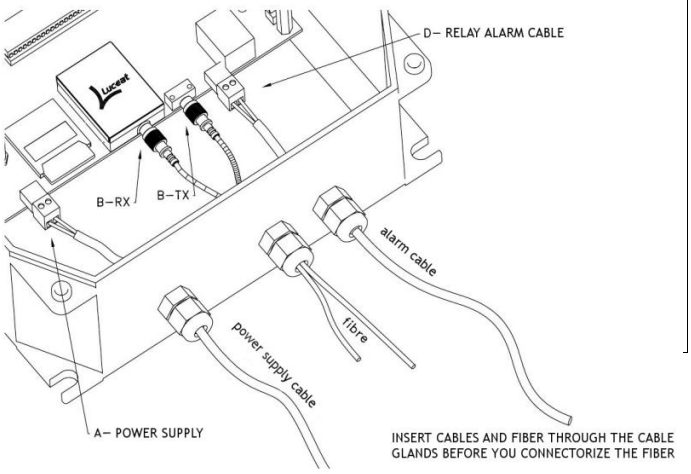


4 - Fiber polishing

Level the fiber by
the metal polishin

ATTENTION!

You should make s
paper.



How to connec

1- <u>Connect the cable Litewire to the device</u>

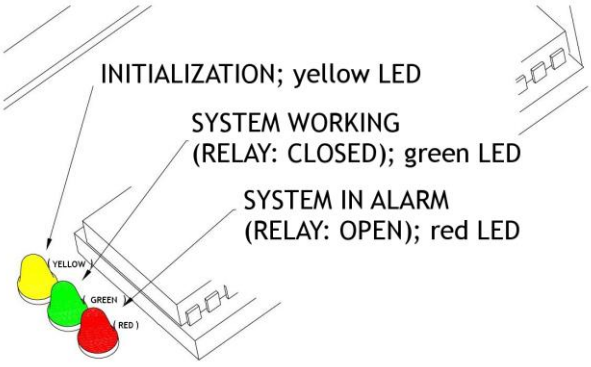
Insert the Litewire cables through the cable glands of the water tight box, crimp the connectors and connect them to the device (B).

2-<u>Connect the alarm zone</u>

Connect the alarm zone (D) of the alarm panel; in case the LiteFENCE devices are placed “in bus”, only the last device will be connected to the alarm system.

*The **circuit is normally closed***, so the relay is closed.

In case of disconnection, cable break, no power or cable bending, the circuit opens.



3- Connect power supply (e.g.from the battery of the alarm panel)

Connect the power supply (A)

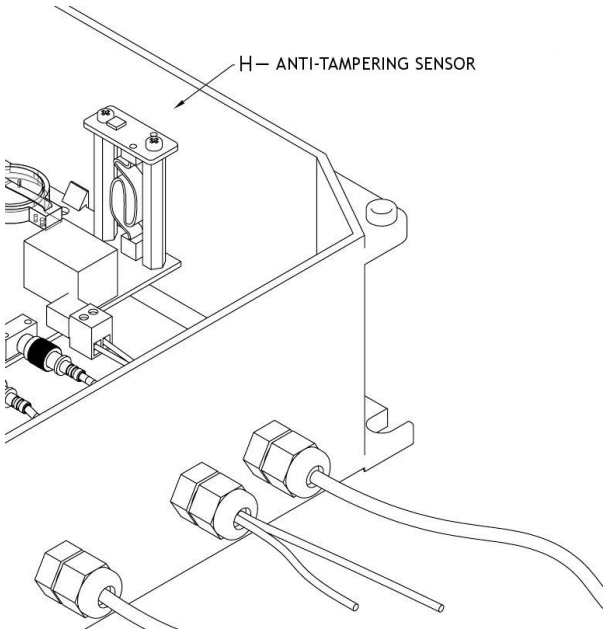
(see previous figure).

The yellow led glows for some seconds and the green led glows.

From this moment on, the transmission port (Tx) emits codified light signals which pass through the plastic optical fiber and arrives at the receiving port (Rx). The device will continually control the power of the signal received.

When the device detects a difference in power, due to cable cut or bendings on the fiber, an alarm will go off.
The alarm status is shown on the display and with the glowing red led.

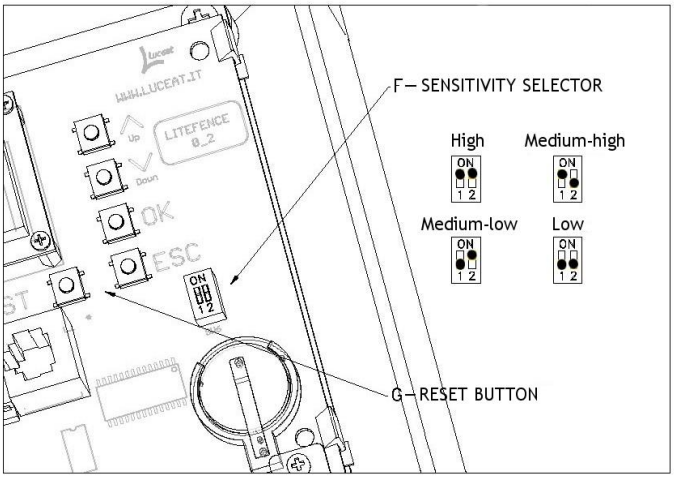
4- Connect the alarm relay (10A to 240VAC) to the alarm system; you can place the anti-tampering resistance in series.



5-Sensitivity adjustment

This device has 4 sensitivity settings you can select according to your application using the selector (F).

The intermediate levels can be used to decrease the system sensitivity in case, for example, of alarms due to bad weather conditions or to increase the protection level.



After changing sensitivity, RESET the system using the reset botton(G).

***6-a Installation with bolts and clips:* Set the analysis interval**

Menu→Configuration→Time window
You can set the analysis interval of the light signal. Range:1s to 60s.
The analyser compares the current attenuation rate to the attenuation rate of 1 to 60 seconds

before, and triggers the alarm if the rates are different.
Standard interval: 20 or 60 seconds.
Set a short interval in case you want to reduce unwanted alarms.

<u>6-b. Installation with SV sensor:</u> Set the analysis interval

Menu→Configuration→Time window
You can set the analysis interval of the light signal. Range: 0.1s to 10s.
If the variation of the light signal last over that interval, there will be an alarm on the NC contact.
Standard interval: 1 second.

Menu →Configuration →Type of fence

1. Orsogril – lower sensitivity: choose this setting if the fence is type Orsogril, about 2m high, or if the fence easily transmits the oscillations due to climbing over a long distance
2. Standard – higher sensitivity: choose this if the fence is very low, very rigid or, in general, if the fence scarcely transmits the oscillations due to climbing over a long distance

LiteFENCE analyser

Protection rating	IP55
Operating range	0-250m
Optical power budget	30dB
Alarm output	5A/240 VAC
Power	12-24±10%
Operating temperature	-20°+70°C
Humidity	from 5 to 90%
Consumption at 12VDC	140mA
Max. power	2W
Weight in IP55 box	194g
IP55 Box dimensions	220 x 255 x 90 mm
Output plastic fiber connector	F-SMA
Immunity to EMI/RFI	Total

LiteFENCE Transmitter

Protection rating	IP55
Operating range	0-250m (max 30dB)
Optical power budget	30dB
Power	12V±10%
Operating temperature	-20°+70°C
Humidity	5 to 90%
Consumption at 12VDC	80mA
IP55 Box dimensions	115 x 160 x 60 mm
Output plastic fiber connector	F-SMA
Immunity to EMI/RFI	Total

Data Analysis

LiteFENCE continually logs the attenuation rates over the cable as well as alarms, recording them to an SD memory card (E). Date and time are already set.

After one month of operation, you can send the SD memory card in the device to Luceat: we will give you free support about the most appropriate level of sensitivity that should be selected on the device. For this reason, there are 2 SD memory cards in the package.

WARNING: the files reporting the logs can only be read by a special software of Luceat. **Do not try to open the SD memory card, as all data could be cancelled.**

ALERT "Link is too long"

LiteFENCE indicates when the maximum link length or the maximum attenuation rate has been reached with the following alert on the display.

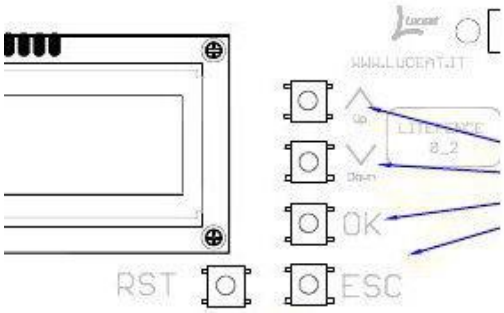
ATTENTION!
LINK IS TOO LONG

In this case, the system keeps operating correctly, but we recommend turning down sensitivity in order to avoid false alarms.

Sensitivity can be adjusted using the selector (F), as shown on page 27.

User's interface

LiteFENCE features a text interface which you can access using the button on the right of the display.



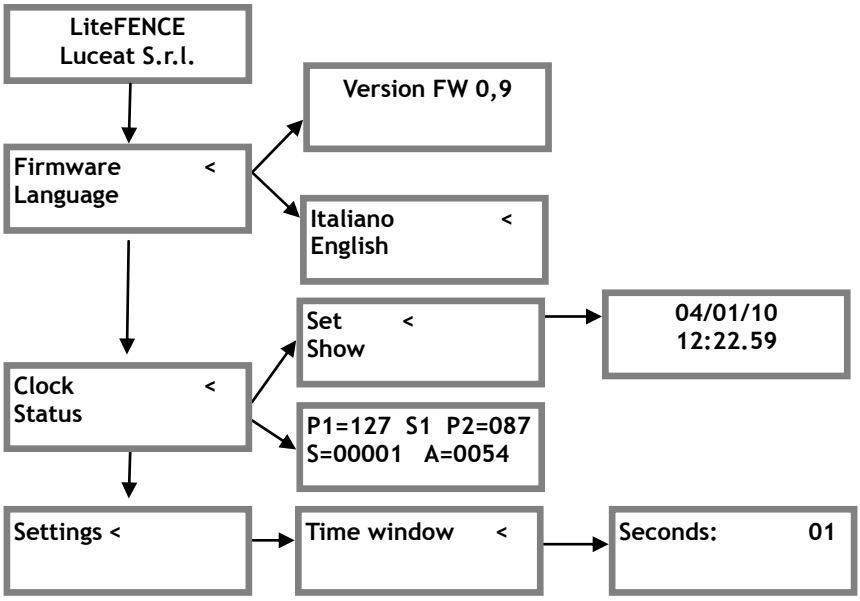
Functions:

- **Up** - menu scroll upwards
- **Down** - menu scroll downwards
- **OK** - option selection
- **ESC** - menu exit

The tree structure will be explained in the next section.

Sub-menus:

- ***Firmware***: shows current firmware version
- ***Language***: language can be selected
- ***Clock***: shows date/time, which can also be set
- ***Status***: reports statistical data on how the device is working
- ***Settings:*** you can set the analysis interval of the light signal attenuation. The variation of this parameter detects attenuation variations in different intervals.
  Rates range from 1s (default: lowest sensitivity) to 60s (highest sensitivity).



In “Status” menu you can see the following parameters

• **P1 and P2** :

Statistical data on how the device is working – it cannot be modified

•**S1: Sensitivity** set with selector (F)

S1 = High sensitivity
S2 = Medium-high sensitivity
S3 = Medium-low sensitivity
S4 = Low sensitivity

• **S : Status**

S=1 Fiber not connected
S=2 Fiber connected and attenuation analysis/
initialization
S=3 Device is active

• **A: Number of alarm** reported by LiteFENCE
This counter can be re-set by keeping button UP pressed while switching on or while resetting the device.

Accessories

Connectors: F-SMA metal connectors , 1 pack= 10pcs

LiteWIRE connectorization kit
Tool-case containing: cutter, crimping tool, automatic cable stripper, no.5 FSMA connectors, no.5 HFBR connectors, polishing discs for FSMA and HFBR, 1000 grit sand paper

Coupler for F-SMA splices.
Each splice also requires no.2 FSMA connectors.

Tensioning bolt for installations on chain link fences

Clip for installations on barbed wire

Technical support

For any further information and technical support, please feel free to contact us:

E-mail : info@cyprusalarmsystems.com

Website : www.cyprusalarmsystems.com

Tel. 7000 4002, 25 748 830
Fax: 25 108 616

DICHIARAZIONE DI CONFORMITA'

Declaration of conformity

No.: 002/2013

Norme, o parti di esse, utilizzate per la presente dichiarazione di conformità:

Regulations, or part of them, used for this declaration of conformity

EN50130-4:2011 Alarm systems Part 4: Electromagnetic compatibility – Product family standard: Immunity requirements for components of fire, intruder and social alarm system

EN61000-6-3:2007 and EN61000-6-3:2007/A1:2011 Electromagnetic compatibility (EMC) Part 6-3: Generic standards – Emission standard for residential, commercial and light industrial environments

APPLIED STANDARDS AND TEST METHODS

Standards	Test type	Limits according to:	Test method according to:
	Persistent conducted emissions 150kHz-30MHz	EN 61000-6-3:2007	EN-55022:2010+/AC:2011
	Radiated emissions 30MHz-1GHz	EN 61000-6-3:2007	EN-55022:2010+/AC:2011
	Voltage variations and Dips immunity	EN 50130-4:2011	EN 61000-4-11:2004
	Electrostatic discharge immunity	EN 50130-4:2011	EN 61000-4-2:2009
	Radiated electromagnetic field immunity up to 1GHz	EN 50130-4:2011	EN 61000-4-3:2006
	Radiated electromagnetic field immunity above 1GHz		
	Electrical fast transient (burst) immunity	EN 50130-4:2011	EN 61000-4-4:2004
	High energy transient (surge) immunity	EN 50130-4:2011	EN 61000-4-5:2006
	Conducted radio-frequency immunity	EN 50130-4:2011	EN 61000-4-6:2007+/EC2007

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